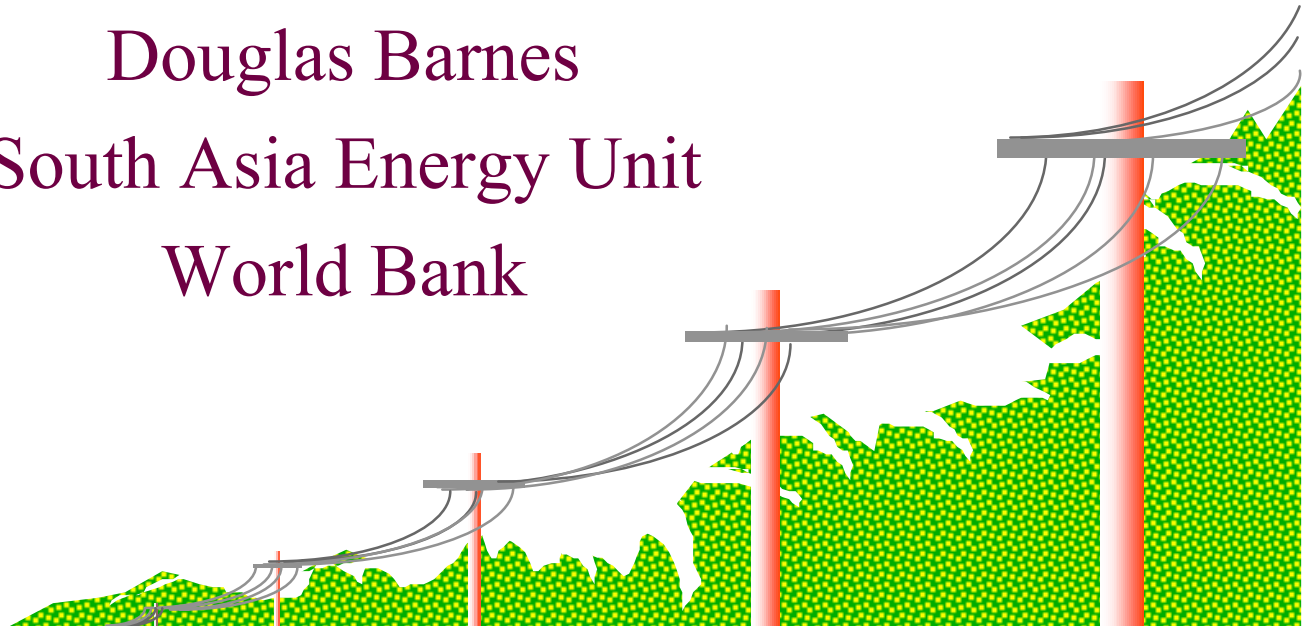


Social Infrastructure and Poverty Studies

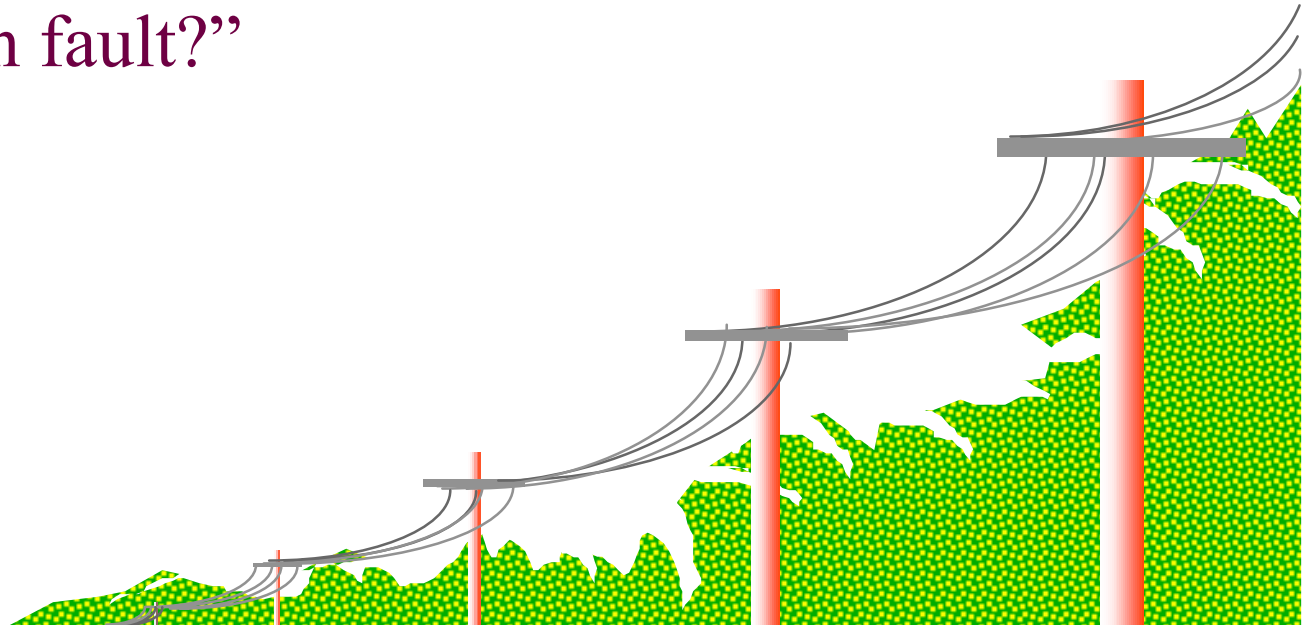
Douglas Barnes
South Asia Energy Unit
World Bank



Introduction

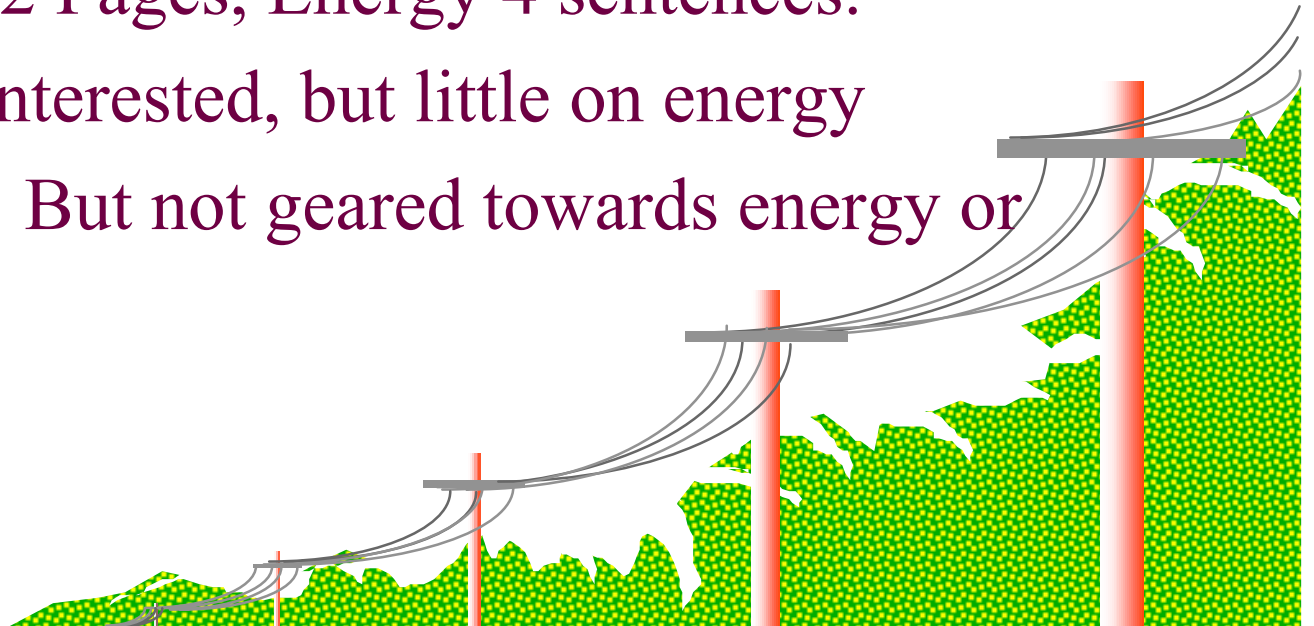
“Two Billion, but whose Counting?”

- Poverty Assessments and Energy
- Impact of Electricity and Social Infrastructure
- Livings Standards Survey and Energy
- Is it “Our own fault?”
- Conclusion



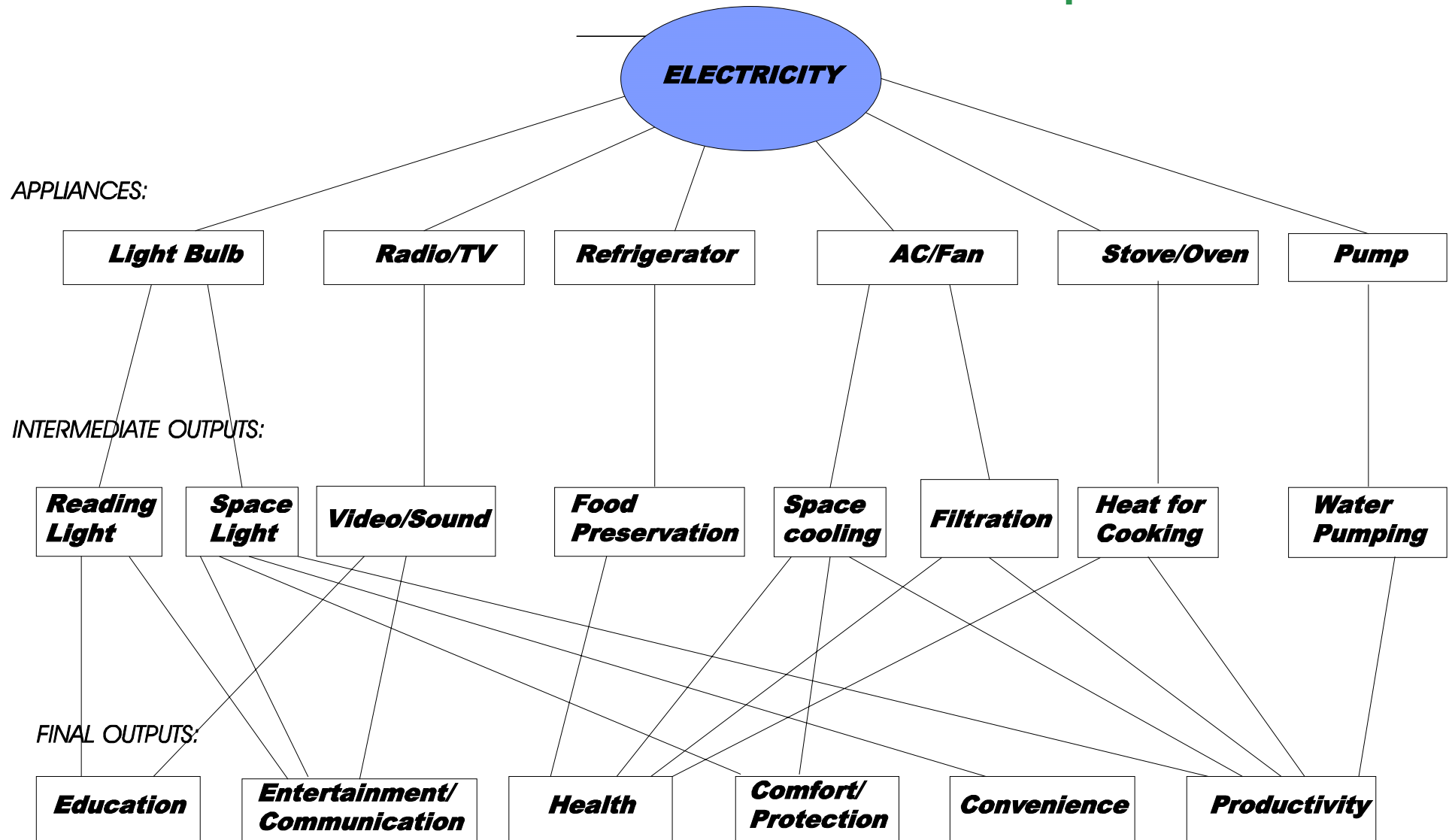
Poverty Assessments and Energy

- Completed by poverty reduction or social sector specialists
- Panama study: Education 4 pages; Health 2 pages; Physical Assets 2 pages; Basic Infrastructure 2 Pages, Energy 4 sentences.
- Philippines: Interested, but little on energy
- Good reports: But not geared towards energy or infrastructure

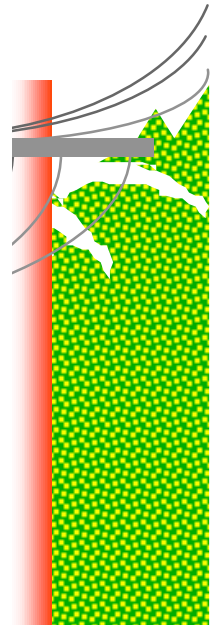
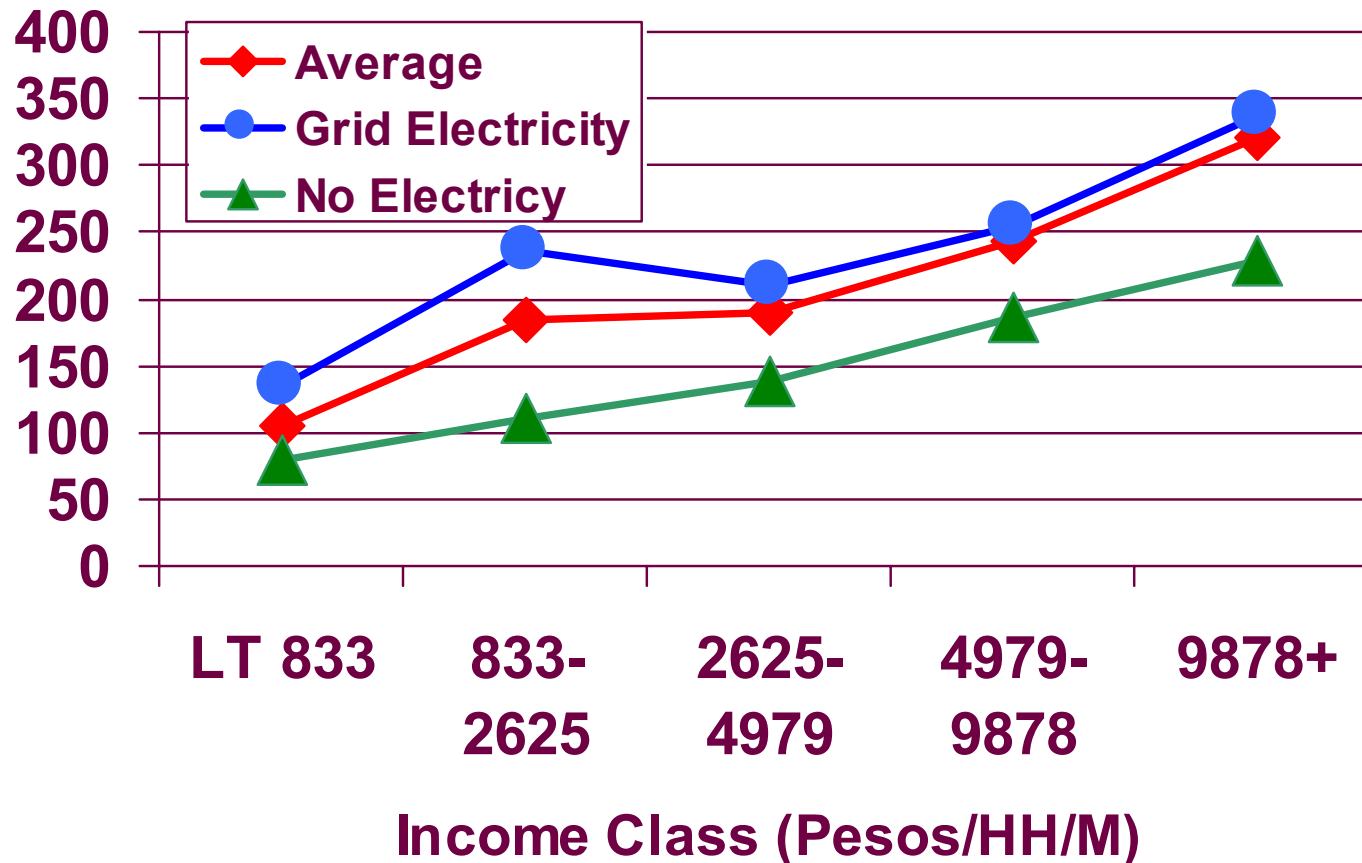


Electricity and Development

It is “derived demand” Stupid



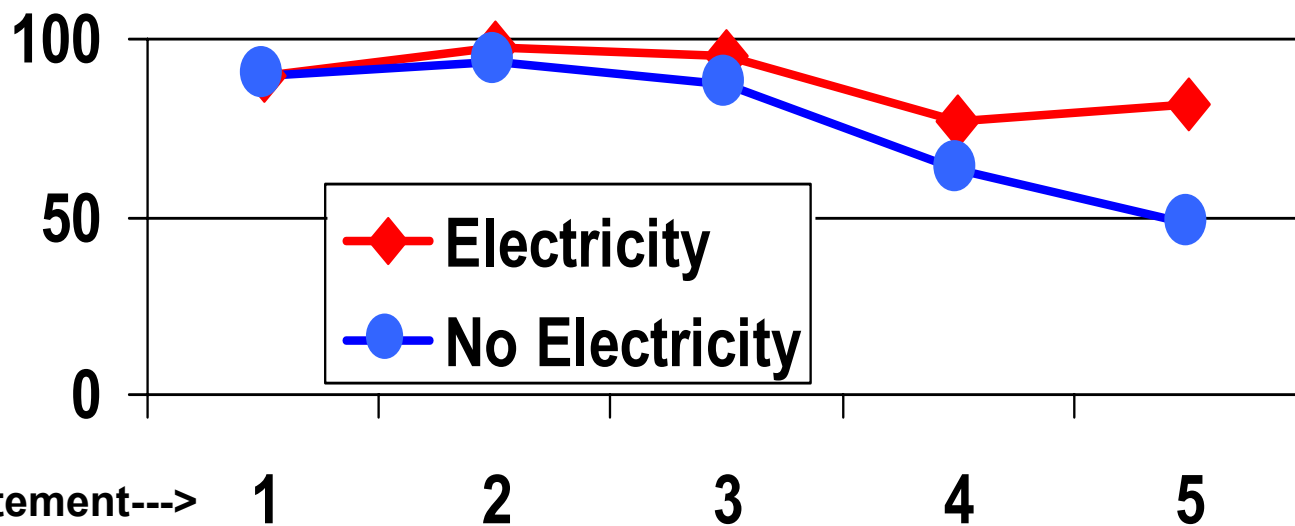
Impact Philippines: Spending on Lighting



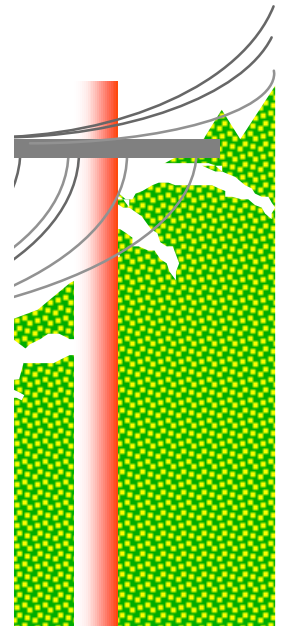
Philippines Education

(% agreeing with statement)

1. Reading is easier with electricity compared to kerosene
2. Having electricity is important for a child's education
3. Because of good light, children study more at night
4. My children study in the evening after dark
5. In my house it is easy to read in the evening.



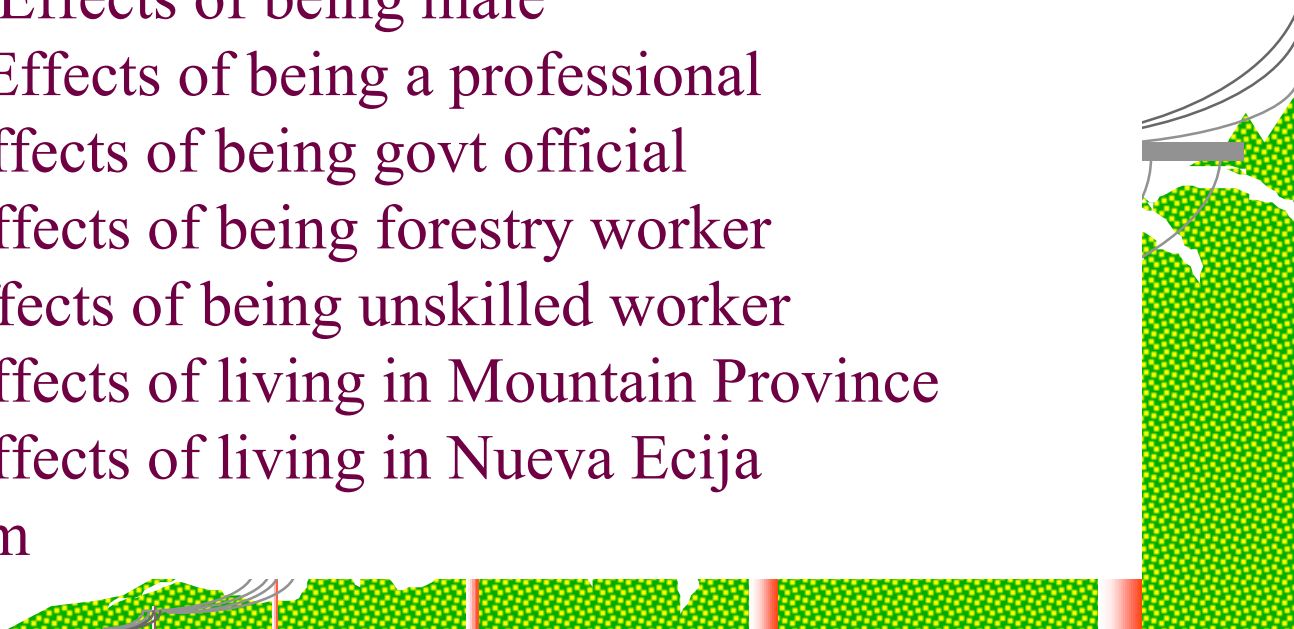
6 Statement--->



Philippines Valuation of Physical Gain (Education Example)

- LEAST SQUARES REGRESSION EXPLAINING 35% of variance for ANNUAL INCOME OF EMPLOYED ADULT

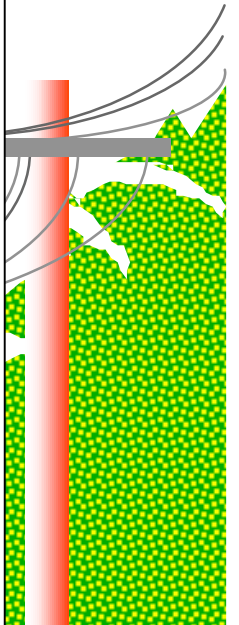
$$\begin{aligned} Y = & A + \\ & + 13,902 \text{ Yrs. Of Education} \\ & + 1103 \text{ Age of Employed Adult} \\ & + \mathbf{2,722 \text{ Interaction of Education and Electrification}} \\ & + 103,050 \text{ Effects of being male} \\ & + 36,898 \text{ Effects of being a professional} \\ & + 1,282 \text{ Effects of being govt official} \\ & - 12,806 \text{ Effects of being forestry worker} \\ & - 10,898 \text{ Effects of being unskilled worker} \\ & - 99,446 \text{ Effects of living in Mountain Province} \\ & - 18,975 \text{ Effects of living in Nueva Ecija} \\ & + \text{error term} \end{aligned}$$



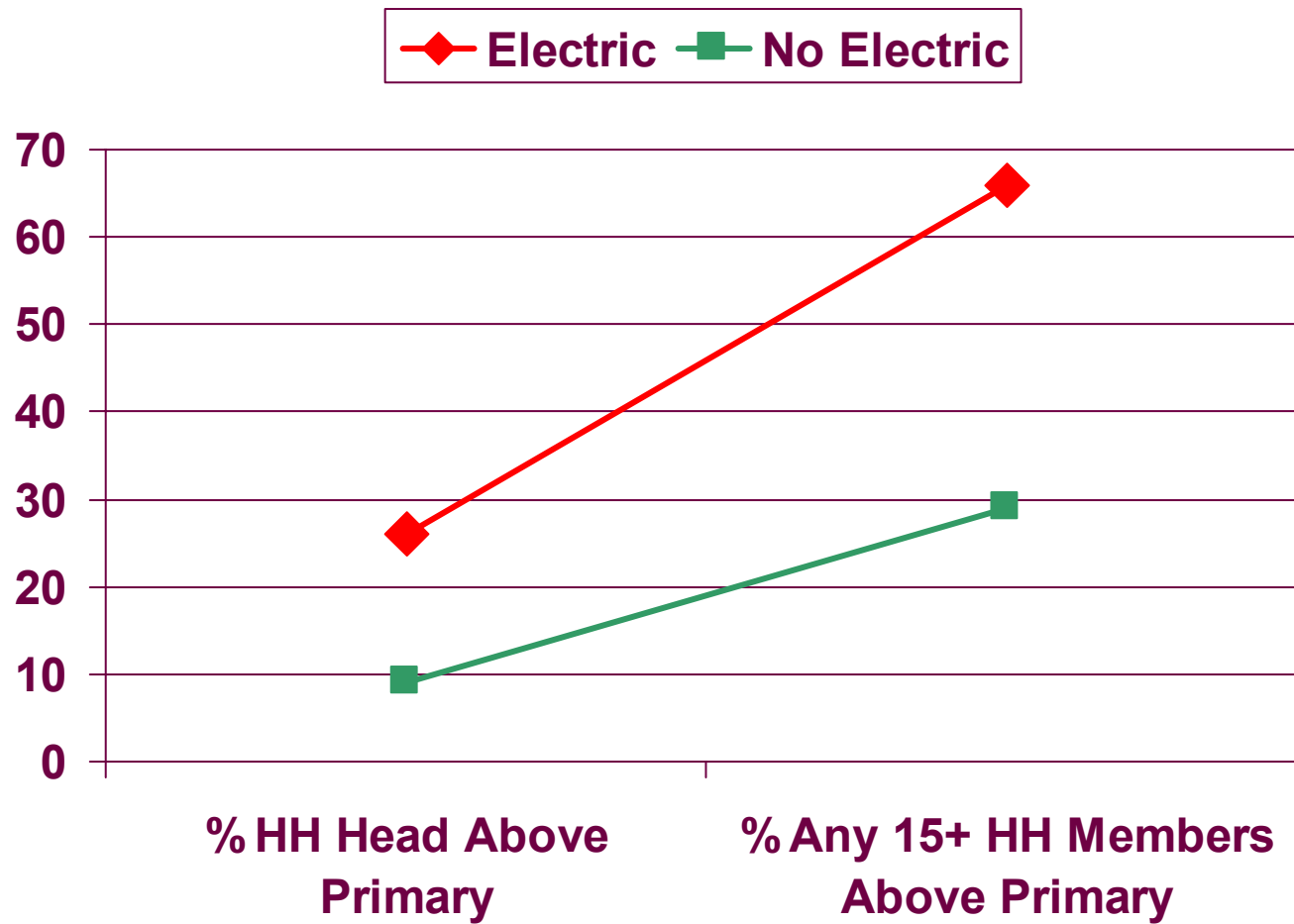
Cheaper Lighting-More Lighting

“Why is electricity so cheap”

- TYPICAL LUMEN COST AND CONSUMPTION WHEN KEROSENE IS USED AS LIGHTING SOURCE
 - COST/KILO-LUMEN HOUR: \$0.36
 - CONSUMPTION/MONTH: 4.1 KILO-LUMEN HOURS
- TYPICAL LUMEN COST AND CONSUMPTION WHEN ELECTRICITY IS USED AS LIGHTING SOURCE
 - COST/KILO-LUMEN HOUR: \$0.0075
 - CONSUMPTION/MONTH: 204.4 KILO-LUMEN HOURS



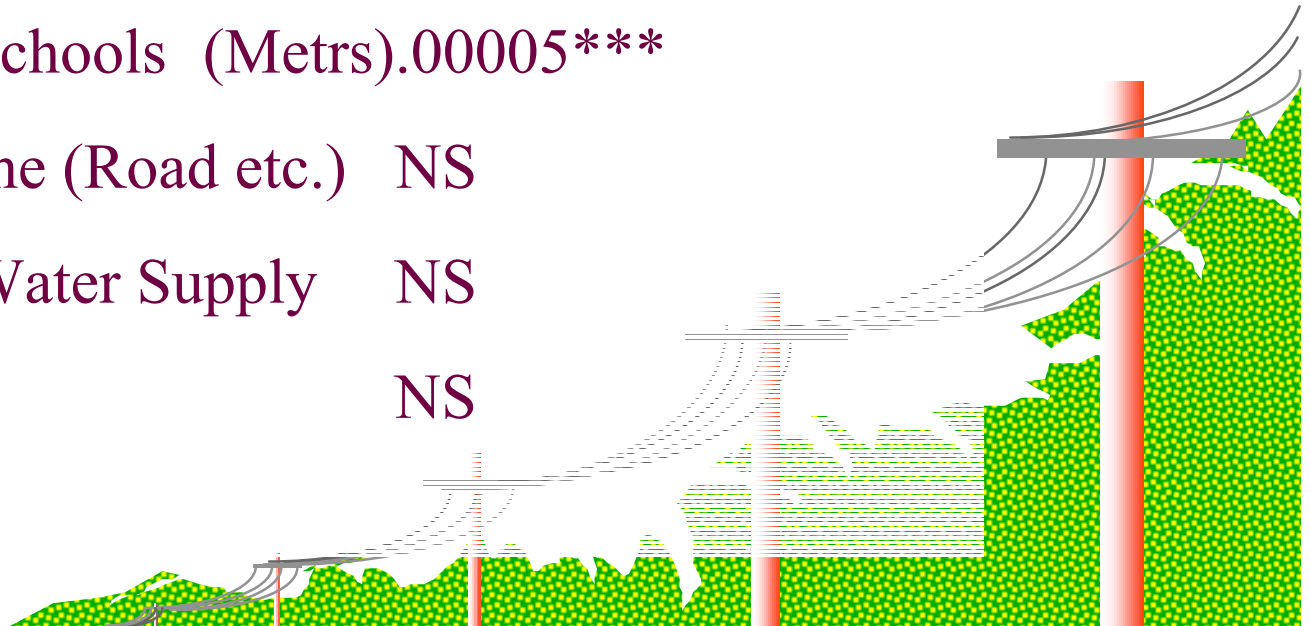
1998 LSM Pseudo Time Series Rural Nicaragua & Education



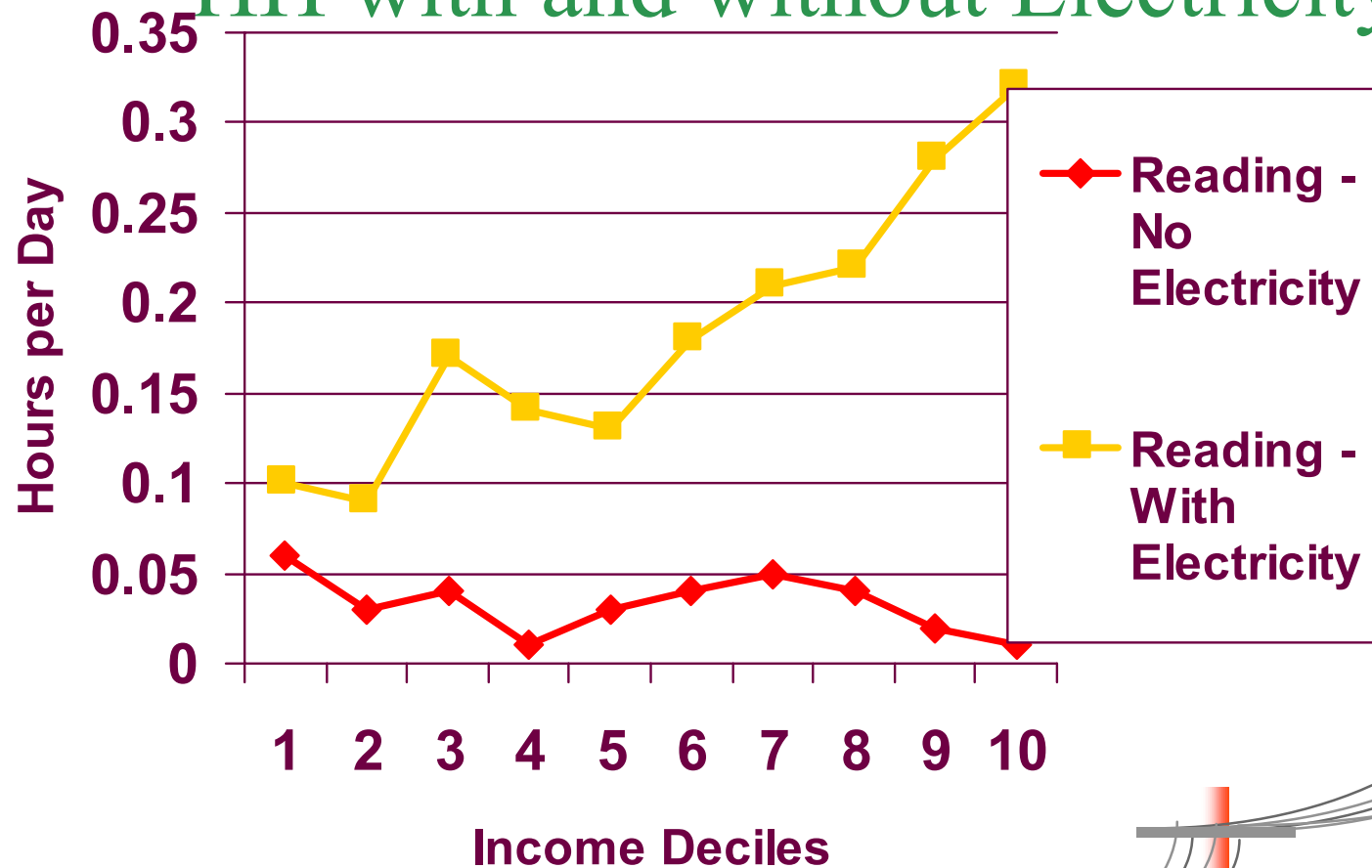
Nicaragua Education and Infrastructure

% People in HH that are Literate (LSMS)

Constant	.481***
Income	NS
Electricity in HH (Yes or No)	.115***
Heads Education (Yrs)	.004***
Proximity to Schools (Metr)	.00005***
Access to Home (Road etc.)	NS
Proximity to Water Supply	NS
Head's Age	NS
etc. R Sq	.17

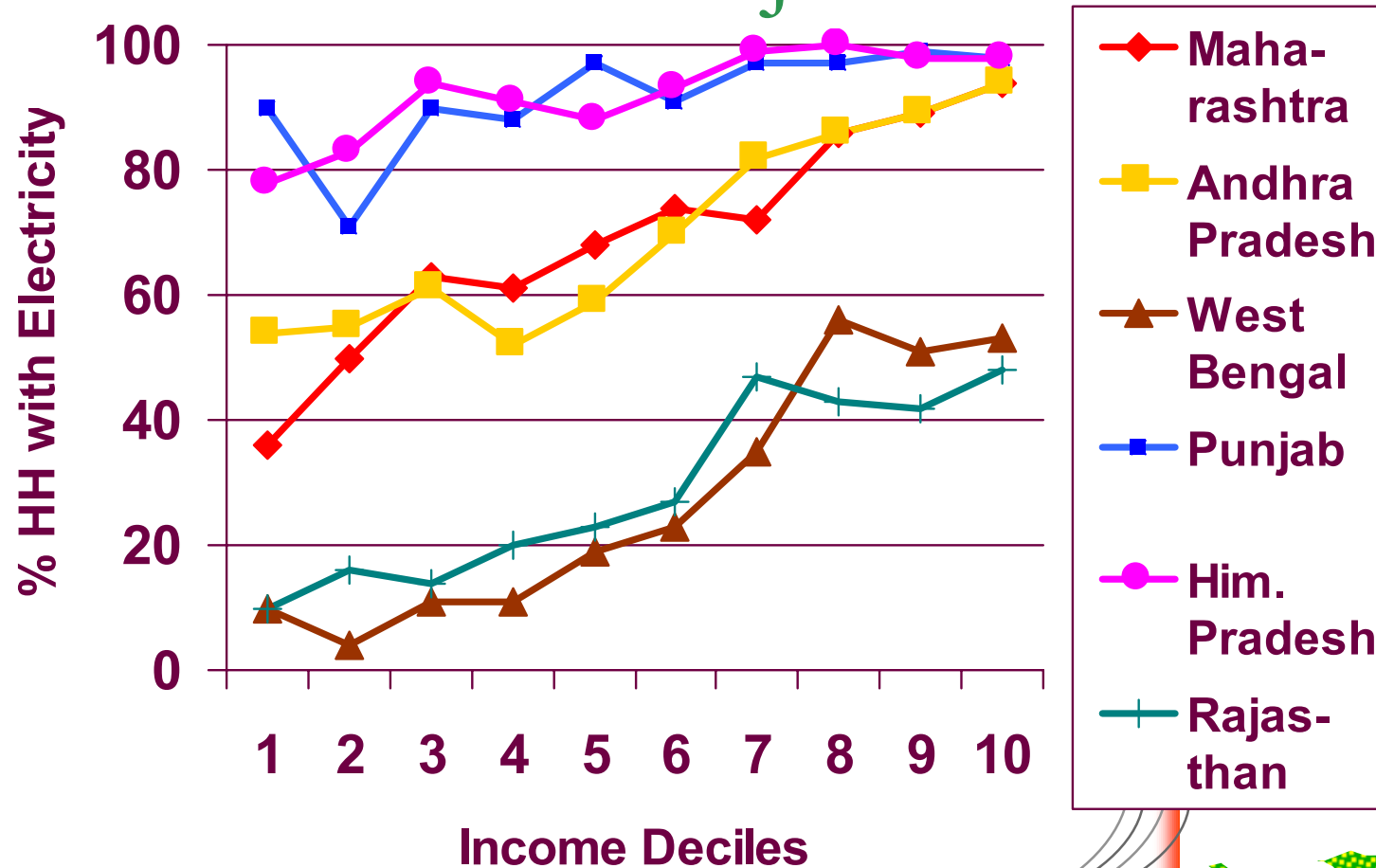


India Women's Time Use HH with and without Electricity



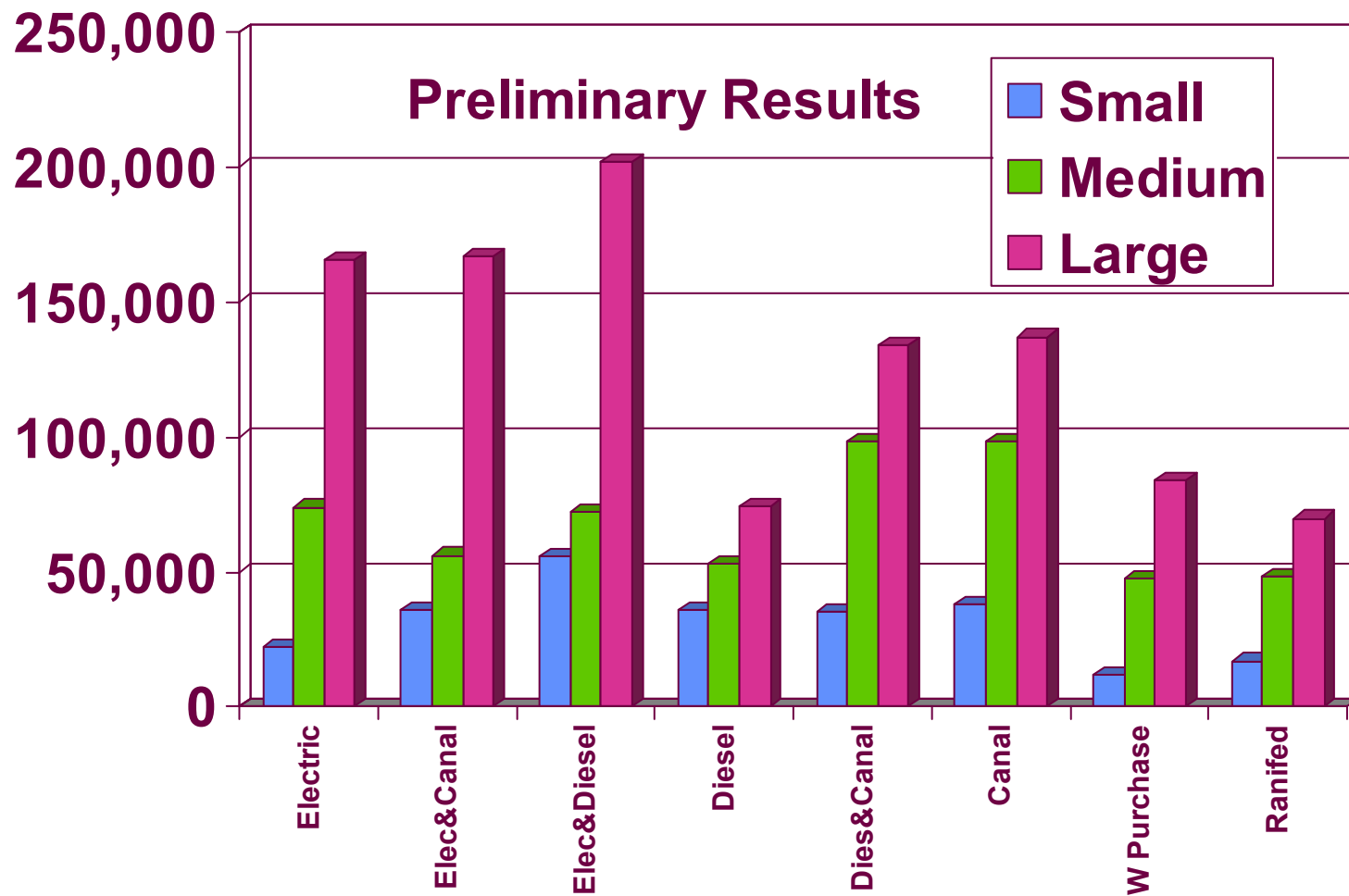
India Percent of HH With Electricity

“Grid RE not just for Rich”



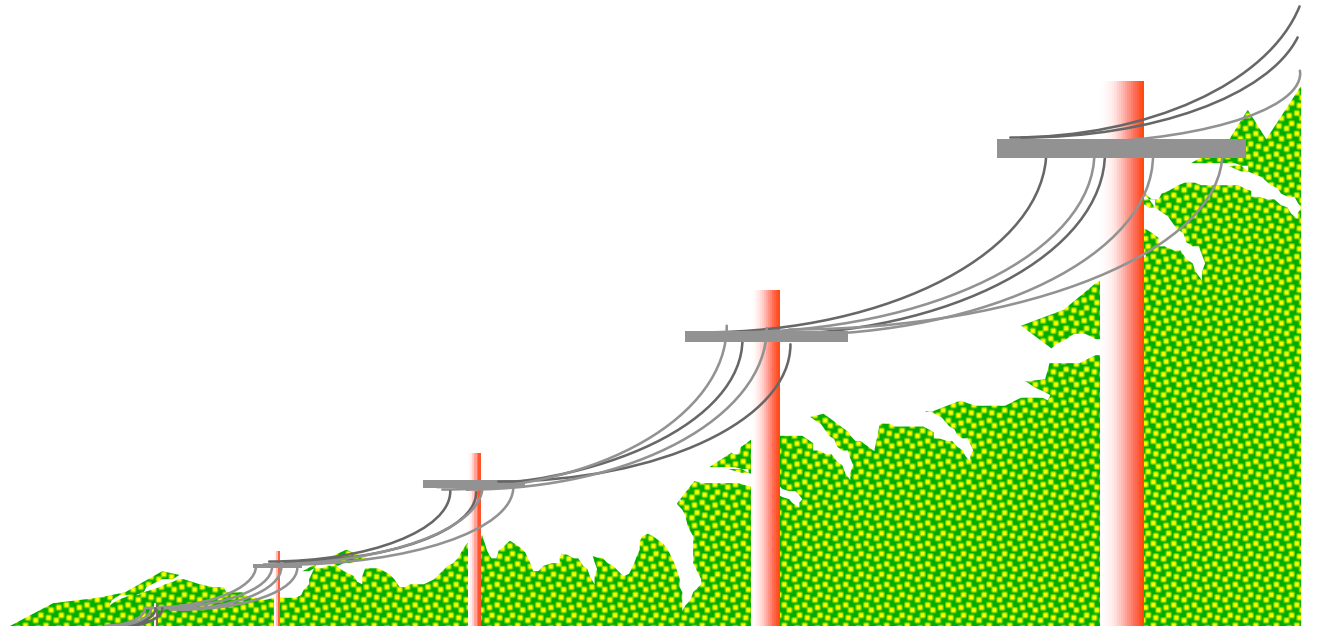
India: Returns to Irrigation

Net Income in Rs. Per Farm Per Year



Nicaragua LSMS

- Survey is about 200 pages long
- Takes 6 hours to administer
- How many pages on energy?



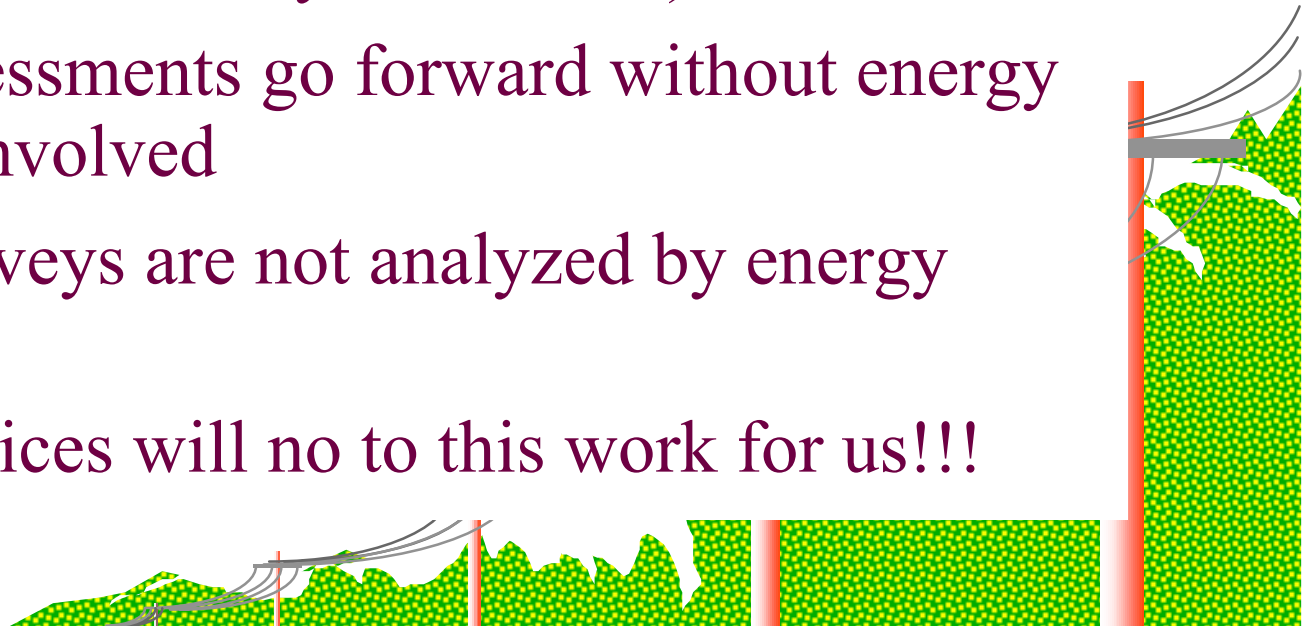
Statistically Ranking Programs

- Electricity often is not the top priority, but gets some votes (even without hanging chads)
- Philippines: 25 % of HH ranked electricity as priority
- But the 80% communities with electricity would not rank it high, because they already have it.
- Recent Barangay offgrid survey: Electricity ranked first, Roads second, job opportunities third, Health facilities fourth, educ. Facilities fifth.



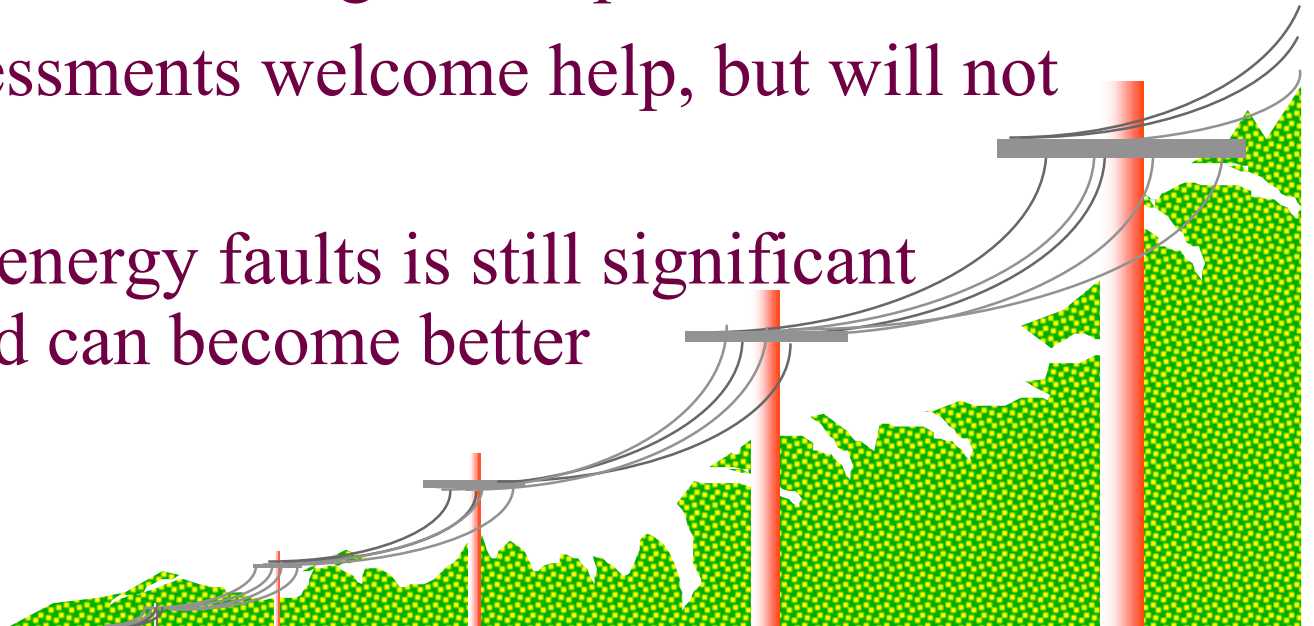
Energy Practice: “Is it our fault?”

- In discussing impact of electricity we either:
 - express that electricity does not have in impact in all regions (shooting our own feet)
 - or give a naïve exposition of all the benefits (dignity of humanity is elevated)
- Poverty assessments go forward without energy specialists involved
- Existing surveys are not analyzed by energy specialists
- Others practices will no to this work for us!!!



Conclusion

- Recognize that the benefits of “modern” energy are high, especially for poor
- but we need to measure them objectively
- Survey instruments and market assessments are available; methods being developed
- Poverty assessments welcome help, but will not pay for it
- LSMS with energy faults is still significant resource, and can become better



Last Thought

- Many of our energy loans have great potential to reach the poor
- But they often are not designed in such a way to have the maximum benefit
- Need for better assessments of how to have a greater, broader impact
- This serves dual purpose on documenting poverty alleviation as well

